NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

FILTER STRIP

(ACRES)

CODE 393

DEFINITION

A strip or area of herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forest land) and environmentally sensitive areas.

PURPOSE

- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff
- To reduce dissolved contaminant loadings in runoff
- To serve as Zone 3 of a Riparian Forest Buffer, Practice Standard 391
- To reduce contaminants in runoff from manure stacking facilities.
- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in surface irrigation tailwater
- To restore, create or enhance herbaceous habitat for wildlife and beneficial insects.
- To maintain or enhance watershed functions and values

CONDITIONS WHERE PRACTICE APPLIES

This practice applies (1) in areas situated below cropland, grazing land, or disturbed land (i.e. harvested forest land, stacking facilities, yards etc)(2) where sediment, particulate organic matter and/or dissolved contaminants may leave these areas and enter environmentally sensitive areas; (3) in areas where permanent vegetative establishment is needed to enhance wildlife and beneficial insects, or maintain or enhance watershed function. This practice applies when planned as part of a conservation management system.

CRITERIA

General criteria applicable to all purposes

Filter strips shall be designated as vegetated areas to treat runoff.

Overland flow entering the filter strip shall be primarily sheet flow. Concentrated flow shall be dispersed.

State listed noxious weeds will not be established in the filter strip and will be controlled if present.

Filter strip establishment shall comply with local, state and federal regulations.

Additional criteria to reduce sediment, particulate organics, and sediment-adsorbed contaminant loadings in runoff

Filter strip flow length shall be determined based on field slope percent and length, and filter strip slope percent, erosion rate, amount and particle size distribution of sediment delivered to the filter strip, density and height of the filter strip vegetation, and runoff volume associated with erosion producing events. The minimum flow length for this purpose shall be 20 feet.

Filter strip location requirements:

a) The filter strip shall be located along the downslope edge of a field or disturbed area (harvested forest land, yards etc). To the extent practical it shall be placed on the approximate contour.

b) The drainage area above the filter strip shall have greater than 1% but less than 10% slopes.

c) The ratio of the drainage area to the filter strip area shall be less than 60:1.

d) The average annual sheet and rill erosion rate above the filter strip shall be less than 10 tons per acre per year

The filter strip shall be established to permanent herbaceous vegetation consisting of a single species or a mixture of grasses, legumes and/or other forbs adapted to the soil, climate, and nutrients, chemicals, and practices used in the current management system. Species selected shall have stiff stems and a high stem density near the ground surface. Stem density shall be such that the stem spacing does not exceed 1 inch.

Additional criteria to reduce dissolved contaminants in runoff

The criteria given in "Additional criteria to reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff" also apply to this purpose.

Filter strip flow length required to reduce dissolved contaminants in runoff shall be based on management objectives, contaminants of concern, and the volume of runoff from the filter strip's drainage area compared with the filter strip's area and infiltration capacity.

The flow length determined for this purpose shall be in addition to the flow length determined for reducing sediment, particulate organics, and sediment-adsorbed contaminant loadings in runoff. The minimum flow length for this purpose shall be 30 feet.

Additional criteria to reduce contaminants in runoff from manure stacking facilities

The following items are necessary design considerations for filter areas that are a component of animal waste stacking facilities.

1. All unpolluted surface runoff will be excluded from the planned filter area.

2. Filter areas will be sited on soils which meet the following criteria::

Max. Slope for Filter Strip	8.0 %
Max. Permeability of C Hor.	2.0 in./hr.
Min. Depth to Bedrock	40 inches
Min. Depth to High Water Table	24 inches

3. Soils that do not meet the above criteria must be modified in consultation with a soil scientist or a NRCS employee that has the appropriate Maine Engineering Job Approval Authority. Never place filter strips on soils that have less than 30 inches of depth to bedrock or that have less than 6 inches of depth to the seasonal high water table (Hydric Soils) or hydraulically restrictive layer

4. Locate filter strips a minimum of 100 feet away from wells and surface water bodies and a minimum of 300 feet away from public Water Supplies (wells, lakes, ponds, rivers, springs). Consider increasing setbacks to 300 and 500 feet respectively when these resource concerns are located downslope from stacking facilities.

5. Sloping filter areas may require some means to uniformly disperse the leachate over the filter area (such as gravel berms, perforated header pipe, level lip spreader, etc.)

6. When perennial vegetation is used, filter strips below stacking facilities will be sized based on 40 square feet of perennial vegetation per animal unit with a minimum flow length based on site specific criteria or otherwise 50 feet **or**

   When annual vegetation is used, filter strips below stacking facilities will be sized based on 80 square feet of annual vegetation (at tolerable soil loss) per animal unit with a minimum flow length based on site specific criteria or otherwise 100 feet.

7. The following types of vegetation cover are acceptable in a filter area: trees and shrubs, hayland, and annual or perennial vegetation. Wetland types of vegetation may be used when determined to be adequate by the SRC.

8. Filter areas will be fenced where necessary to protect continued functioning.

Additional criteria to serve as Zone 3 of a Riparian Forest Buffer, Practice Standard 391

Except for the location requirements, the criteria given in "Additional criteria to reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff" also apply to this purpose.

If concentrated flows entering Zone 3 are greater than the filter strip's ability to disperse them, other means of dispersal, such as spreading devices, must be incorporated.

Additional criteria to reduce delivery of sediment into waterways from forestry operations

As a guide, the length of flow through undisturbed forest floor should be at least 25 feet for slopes of less than one percent and proportionately up to at least 65 feet for 30 percent slopes and at least 150 feet for 70 percent slopes. Longer flow lengths should be used as contributing drainage areas increase.

Filter strip vegetation may be woody and/or herbaceous permanent vegetation.

Additional criteria to reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in surface irrigation tailwater

Filter strip vegetation may be a small grain or other suitable annual with a plant spacing that does not exceed 4 inches.

Filter strips shall be established early enough prior to the irrigation season so that the vegetation can withstand sediment deposition from the first irrigation.

The flow length shall be based on management objectives.

Additional criteria to restore, create, or enhance herbaceous habitat for wildlife and beneficial insects

If this purpose is intended in combination with one or more of the previous purposes, then the minimum criteria for the previous purpose(s) must be met. Additional filter strip flow length devoted to this purpose must be added to the length required for the other purpose(s).

Any addition to the flow length for wildlife or beneficial insects shall be added to the downhill slope of the filter strip. Vegetation to enhance wildlife may be added to that portion of the filter strip devoted to other purposes to the extent they do not detract from its primary functions.

Plant species selected for this purpose shall be for permanent vegetation adapted to the wildlife or beneficial insect population(s) targeted.

If this is the only purpose, filter strip width and length shall be based on requirements of the targeted wildlife or insects. Density of the vegetative stand established for this purpose shall consider targeted wildlife habitat requirements and encourage plant diversity. Dispersed woody vegetation may be used to the extent it does not interfere with herbaceous vegetative growth, or operation and maintenance of the filter strip. Consult with NRCS or USFWS Biologist to determine requirements and recommendations for targeted species.

The filter strip shall not be mowed during the nesting season of the target wildlife.

Livestock and vehicular traffic in the filter strip shall be excluded during the nesting season of the target species.

Additional criteria to maintain or enhance watershed functions and values

Filter strips shall be strategically located to enhance connectivity of corridors and non-cultivated patches of vegetation within the watershed.

Filter strips should be strategically located to enhance aesthetics of the watershed.

Plant species selected for this purpose shall be for establishment of permanent vegetation.

CONSIDERATIONS

Filter strips should be strategically located to reduce runoff, and increase infiltration and ground water recharge throughout the watershed.

Filter strips for the single purposes of wildlife/beneficial insect habitat or to enhance watershed function should be strategically located to intercept contaminants thereby enhancing the water quality of the watershed.

NRCS, Maine

April, 2000

To avoid damage to the filter strip consider using vegetation that is somewhat tolerant to herbicides used in the upslope crop rotation.

Consider using this practice to enhance the conservation of declining species of wildlife, including those that are threatened or endangered.

Consider using this practice to protect National Register listed or eligible (significant) archaeological and traditional cultural properties from potential damaging contaminants.

Filter strip size should be adjusted to a greater flow length to accommodate harvest and maintenance equipment.

PLANS AND SPECIFICATIONS

Based on this standard, plans and specifications shall be prepared for each specific field site where a filter strip will be installed or designated. A plan includes information about the location, construction sequence if needed, vegetation, and management and maintenance requirements.

Specifications will include where applicable:

a) Length, width, and slope of the filter strip to accomplish the planned purpose (length refers to flow length across the filter strip).

b) Species selection and seeding or sprigging rates where needed to accomplish the planned purpose.

c) Where seeding is needed, planting dates, care, and handling of the seed to ensure that planted materials have an acceptable rate of survival.

d) A statement that only viable, high quality, and regionally adapted seed will be used if seed is needed.

e) Site preparation sufficient to establish and grow selected species if seeding is needed.

OPERATION AND MAINTENANCE

For the purposes of filtering contaminants, permanent filter strip vegetative plantings should be harvested as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants that are contained in the plant tissue.

Control undesired weed species, especially state-listed noxious weeds.

Prescribed burning may be used to manage and maintain the filter strip when an approved burn plan has been developed.

Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas, and take other measures to prevent concentrated flow through the filter strip

Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip.

To maintain or restore the filter strip's function, periodically regrade the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function, and then reestablish the filter strip vegetation, if needed. If wildlife habitat is a purpose, destruction of vegetation within the portion of the strip devoted to that purpose should be minimized by regrading only to the extent needed to remove sediment and fill concentrated flow areas.

Grazing shall not be permitted in the filter strip unless a controlled grazing system is being implemented. Grazing will be permitted under a controlled grazing system only when soil moisture conditions support livestock traffic without excessive compaction.

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